

## DRILLING PROGRAM

Hat Mesa No. 1 14,500' Morrow Development Well Permit 14,600'  
Sec. 10, T21S, R32E, Lea County, New Mexico

Conductor pipe: 16" conductor will be set at 40'± with a rathole machine and cemented to the bottom of the cellar with ready-mix.

Surface casing: 11 3/4" casing will be set at 450' in a 15" hole. The drilling fluid will be a fresh water gel spud mud 40-50 vis 8.5#. LCM will be used if circulation is lost. It may be necessary to dry drill. The casing will be 11 3/4" 42 lb/ft H-40 ST&C run with a guide shoe, insert float and three centralizers. The casing is to be cemented to surface with 320 sx class C + 2% CaCl<sub>2</sub> 14.8 ppg 1.32 ft<sup>3</sup>/sk 100% excess.

Nipple Up: The casing head will be a Gray CWC-F 11 3/4" SW x 12" 3,000 WP. Minimum BOP is 2 hydraulic operated rams 10" 3,000 WP BEPCo II (attached). Pressure test stack, choke manifold, and surface casing to 1,000 psi before drilling out.

Intermediate Casing: 8 5/8" casing will be set at 5,800' in an 11" hole. The drilling fluid will be 10 ppg brine 9+pH. From 3,300' to 5,800' viscosity should be maintained 34-37 sec. with salt gel. Lost circulation is expected in the Capitan Reef T/3,550. Ground paper has been a successful LCM for seepage losses. Gross losses usually result in dry drilling. A Caliper Survey should be run to determine the required cement volume.

8 5/8" casing design for 5,800'

0-120'	120'	32 lb/ft	K-55	ST&C
120-2660'	2540'	24 lb/ft	K-55	ST&C
2660-5800'	3140'	32 lb/ft	K-55	ST&C

The 8 5/8" casing will be run with a float shoe, float collar, DV Tool, and 2 cement baskets. Centralizers should be run on the bottom three joints, the two joints with cement baskets, and one just above the DV tool. The float collar should be one joint above the shoe and the baskets should be on the 2 joints below the DV tool. The DV tool should be run at the base of the salt 3,300'±. The first stage cement will be about 400 sx Halliburton Light + 3 lb/sk gilsonite + 1/4 lb/sk flocele 12.9 ppg 1.9 ft<sup>3</sup>/sk tailed with 200 sx C + 2% CaCl<sub>2</sub> 14.8 ppg 1.32 ft<sup>3</sup>/sk. The second stage cement will be about 550 sx Halliburton 'Light' + 3 lb/sk gilsonite + 1/4 lb/sk flocele + 15 lbs/sk salt + 1% CaCl<sub>2</sub> 13.2 ppg 1.96 ft<sup>3</sup>/sk tailed with 100 sx C + 2% CaCl<sub>2</sub> 14.8 ppg 1.32 ft<sup>3</sup>/sk. Displace cement with fresh water. While running casing assure that casing is full at least every 400'.